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10/767,541	01/29/2004	Wayne E. Vick	45626/284121	5361

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EXAMINER

CHOI, PETER Y

ART UNIT	PAPER NUMBER
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1771

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/767,541

Applicant(s)

VICK, WAYNE E.

Examiner

Peter Y. Choi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 41-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 41-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

NON-FINAL ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 16, 2007, has been entered.

Specification

2. The disclosure is objected to because of the following informalities: the parent U.S. App. No. 09/991,106 has since issued as USPN 6,758,644. Appropriate correction is required.

Upon further review, the amendment filed August 31, 2006, is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The addition of "KOSA, Technical Filament Division, Charlotte, North Carolina," with "Invista, Wichita, Kansas" constitutes new matter as the Invista yarn does not appear to be identical to the KOSA yarn based on the Amendment to the Specification.

The addition on page 16, at the end of line 14, describing how one of ordinary skill in the art at the time the invention was made would interpret Type 792 yarn is new matter. The specification does not describe Type 792 in regards to the chemical and physical structure recited in the paragraph sought by Applicant to be entered. Additionally, in the event that a specific

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type of Type 792 is deemed to be disclosed, it is unclear whether the description provided by Applicant is intended to further identify the KOSA Type 792 yarn disclosed in the specification as originally filed, or Invista Type 792 yarn, and therefore constitutes new matter. Lastly, Applicant has not provided evidence that the Type 792 yarn, whether it is KOSA or Invista yarn, identifies the KOSA Type 792 yarn disclosed in the specification as originally filed. In other words, Applicant has not provided evidence that the chemical and physical structure sought to be entered into the specification refers to a specific type of KOSA Type 792 yarn as it was known at the time the invention was made.

The addition on page 17, line 7, replacing "KOSA, Technical Filament Division, Charlotte, North Carolina" with "Trevira, The Fibre Company, of Germany" constitutes new matter as the specification teaches that a trademarked TREVIRA is manufactured by KOSA and not by Trevira. Applicants have not provided evidence that a trademarked TREVIRA is not manufactured by KOSA and is manufactured by another entity.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-10 and 41-49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains,

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or with which it is most nearly connected, to make and/or use the invention. As previously discussed in the Non-Final Rejection of March 9, 2006, the specification would only be enabling for a specific type of yarn meeting the property requirements of the first layer (KOSA Type 792, denier 1000, 1300, or 1500) which are specifically disclosed in the specification. The specification is not reasonably enabling for building materials which would meet the claimed properties disclosed. One of ordinary skill in the art would not be able to make and/or use the invention without undue experimentation since there are no teachings or suggestion in the specification of materials which could meet the claim limitations of the first layer.

Response to Arguments

5. Applicant's arguments filed February 16, 2007, have been fully considered but they are not persuasive. Applicant argues that the Type 792 yarn disclosed in the specification is only one embodiment, and the specification describes other types of yarns that would enable one skilled in the art to make or use the invention, such as yarns with 1000, 1300 or 1500 denier, with the characteristics set forth on page 14 line 9 to page 15 line 14 of Applicant's specification.

Regarding Applicant's arguments, Examiner respectfully disagrees. First, the Type 792 yarn does not appear to be suitable for use in the claimed invention according to the information set forth in Applicant's Amendment to the Specification of January 12, 2007 and the portion of Applicant's specification cited in Applicant's remarks of January 12, 2007. Elongation at break is defined by Applicant as the percentage of elongation present in a material after it has been taken to break (Applicant's specification, page 14 lines 12-13). Based on Applicant's definition, Examiner plainly interprets the claimed "elongation characteristic within the range of about 2.5

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percent to about 4.7 percent before breaking” as the elongation at break percentage without further modification.

The claimed invention requires the yarns in the first layer to have an elongation characteristic within the range of about 2.5 percent to about 4.7 percent before breaking. However, according to Applicant’s Amendment to the Specification of January 12, 2007, Applicant submits that Type 792 yarn is characterized by an elongation at break percentage of 10.0, 9.9 and 9.8 when characterized by deniers of 1000, 1300 and 1500 respectively. Therefore, based on Applicant’s amendments, Examiner submits that the embodiment of Applicant’s invention wherein the yarns of the first layer comprise KOSA Type 792 yarn is not enabling for the claimed embodiment as KOSA Type 792 yarn does not appear to have an elongation at break of about 2.5 percent to about 4.7 percent since Applicant defined Type 792 yarn to have an elongation at break percentage 10.0, 9.9 and 9.8 when characterized by deniers of 1000, 1300 and 1500 respectively.

Applicant’s arguments that the specification describes other types of yarns with the characteristics set forth on page 14 line 9 to page 15 line 14 of Applicant’s specification is not persuasive. The characteristics set forth in the specification are properties of the yarns. However, Applicant’s specification does not set forth the actual chemical structure of the yarn to define the breadth of the invention. Even if Applicant sets forth the break load test on a tensile tester to determine the elongation characteristic and creep, one of ordinary skill in the art would be required to test literally every yarn with the break load test in order to identify a yarn with an elongation characteristic and creep suitable for use in Applicant’s invention. Additionally,

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Applicant has not set forth any process, directions, or working examples by which a yarn could be formed with the required denier and elongation characteristic and creep.

Therefore, Applicant's specification does not appear to be enabling for Applicant's claimed invention as one of ordinary skill in the art would not be able to make and/or use the invention with undue experimentation since there are no teachings or suggestion in the specification of materials which could meet the claim limitations of the first layer.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-10 and 41-49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 1 and 41 recite physical properties of yarns (i.e. elongation characteristic before breaking, creep after elongation, denier range), without setting forth structural or chemical characteristics of the yarn. According to Ex parte Slob, 157 USPQ 172,

"Claims merely setting forth physical characteristics desired in article, and not setting forth specific compositions which would meet such characteristics, are invalid as vague, indefinite, and functional since they cover any conceivable combination of ingredients presently existing or which might be discovered in the future and which would impart desired characteristics..."

The inquiry is to determine whether the claims set out and circumscribe a particular area with a reasonable degree of precision and particularity, and the definiteness of the claim language employed must be analyzed, not in a vacuum, but always in light of the teachings of the

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prior art and of the particular application disclosure as it would be interpreted by one possessing an ordinary level of skill in the pertinent art.

The claims only describe the properties of the first layer yarn without describing the structure of the first layer. Applicant only claims the characteristic properties of yarns which may comprise the first layer instead of claiming the specific yarns comprising such properties. Conceivably, any yarn known at the time of conception or later invented comprising, for example, an elongation characteristic range of about 2.5 to about 4.7 percent before breaking, could comprise the first layer.

Even when read in light of the specification, the characteristics of the yarn comprising the first layer are vague and indefinite as to the scope of what materials may contain those characteristics. The specification discloses that a possible material which may comprise the first layer is the KOSA Type 792 yarn, yet the disclosure and the subsequent amendment do not identify that the KOSA Type 792 yarn has a creep of less than about 2 percent after elongation, as claimed.

For the foregoing reasons, the claims circumscribe an area of protection which exceed a reasonable degree of precision and particularity. Accordingly, claims 1-10 and 41-49 are indefinite for failing to identify a structure which can meet the claim limitations and for reciting only the desired properties of the yarn.

Response to Arguments

Applicant's arguments filed February 16, 2007, have been fully considered but they are not persuasive. Applicant argues that claim 41 recites a structural property of the first layer of the

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strap by providing a denier within the range of about 1000 to 1500. Additionally, Applicant argues that claims 1 and 41 both contain physical properties that particularly point out the invention because a skilled artisan would understand which material meet the properties.

Regarding Applicant's arguments, Examiner respectfully disagrees. §112 second paragraph requires that the claims must particularly point out and distinctly define the metes and bounds of the subject matter that will be protected by the patent grant. As presently claimed, the metes and bounds and therefore the scope of the claims is unclear since the specification and the claims themselves do not provide any chemical structure of yarn which is suitable for the claimed invention. By not setting forth the chemical structure of the yarns and only referring to the properties of the yarns, one of ordinary skill in the art would not be able to discern what would and would not be within the scope of the patent.

Applicant contends that the elongation characteristic and creep are determined by a break load test on a tensile tester to determine the properties. However, the break load test on a tensile tester as disclosed in Applicant's specification does not set forth the manner in which the yarn of 1000, 1300 or 1500 denier is determined to have the claimed elongation percentage or creep.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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9. Claims 1, 3, 10, 41, and 43 are rejected under 35 U.S.C. 102(b) as anticipated by USPN 5,695,373 to Blackmore.

Regarding claims 1, 3 and 10, Blackmore teaches a composite material forming a strap for restraining freight, the material comprising a first layer comprising a plurality of strands comprising yarn having a creep of less than about 2 percent after elongation and a second layer comprising nonwoven fabric, the second layer attached to the first layer (see entire document including column 1, lines 27-34, column 3 lines 19-35, column 6 lines 29-44).

Regarding claims 1, 3 and 10, Blackmore does not appear to specifically teach that the yarn has an elongation characteristic within the range of about 2.5 percent to about 4.7 percent before breaking, wherein the elongation characteristic and creep are determined by a break load test on a tensile tester. Although the prior art does not appear to disclose the elongation characteristic and the method by which the elongation characteristic and creep are determined, as can be best determined by Examiner, the claimed properties are deemed to be inherent to the structure in the prior art since the Blackmore reference teaches an invention with a similar structural composition (plurality of polyester yarns preferably of 1000 denier attached to a second layer) as the claimed invention. Properties are the same when the structure and composition are the same. The burden is on the Applicant to prove otherwise.

Regarding claim 3, the composite material further includes a portion having a third layer comprising an adhesive substance positioned between the first layer and the second layer (column 3 lines 31-35).

Regarding claim 10, the yarn has a denier of about 1500 (column 6 lines 9-15).

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Regarding claims 41 and 43, Blackmore teaches a composite material forming a strap for restraining freight, the material comprising a first layer comprising a plurality of strands comprising yarn having a denier within the range of about 1000 to 1500 and a creep of less than about 2 percent after elongation and a second layer comprising nonwoven fabric, the second layer attached to the first layer (see entire document including column 1, lines 27-34, column 3 lines 19-35, column 6 lines 9-44).

Regarding claim 43, the composite material further includes a portion having a third layer comprising an adhesive substance positioned between the first layer and the second layer (column 3 lines 31-35).

Response to Arguments

10. Applicant's arguments filed February 16, 2007 have been fully considered but they are not persuasive. Applicant argues that the claimed properties of elongation characteristic and creep are not inherent in the invention of Blackmore. Additionally, Applicant argues that Blackmore is non-analogous art and teaches away from yarn having the claimed elongation characteristic and creep.

Regarding Applicant's arguments that the claimed properties are not inherent in the invention of Blackmore, Examiner respectfully disagrees. Regarding the elongation characteristic, as Examiner can best determine, the elongation characteristic appears to be an inherent feature of yarn or yarn having a denier of between 1000 and 1500. Applicant's specification does not provide any further guidance as to the elongation characteristic. Therefore, as Blackmore teaches a layer comprising polyester yarn having a denier between 500

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and 2000, preferably 1000, the invention appears to have an elongation characteristic similar to the claimed invention. Regarding the claimed creep, Blackmore teaches that the tension in the yarns is preferably no more than 1.5%. Applicant defines creep as the amount of elongation that is permanent and not recoverable (Applicant's specification, page 14 line 11). Therefore, the maximum tension in Blackmore appears to be analogous to Applicant's claimed creep.

Regarding Applicant's argument that Blackmore is non-analogous art and teaches away from the claimed elongation characteristic and creep, Examiner respectfully disagrees. First, in determining whether prior art is non-analogous art, a reference may be directed to an entirely different field of endeavor than that of the claimed invention and still anticipatory if it explicitly or inherently discloses every limitation recited in the claims. A reference which is outside the field of the claimed invention is analogous art if it recites, explicitly or inherently, every limitation or structure of the recited claims. It is not necessary for the invention in the reference to intend to accomplish the purpose of the claimed invention. The invention in the reference must simply be capable of accomplishing the purpose of the claimed invention. Intuitively, the similar purposes can be accomplished by identical inventions containing identical structures. Applicant's claimed invention only requires a composite material comprising a first layer and a second layer. The invention of Blackmore comprises a composite material comprising a first and second layer structurally similar to the claimed invention and therefore capable of accomplishing the purpose set forth in the preamble of the claims.

Second, as set forth above, Blackmore appears to teach the claimed elongation characteristic and creep. Therefore, Blackmore does not appear to teach away from the claimed properties.

Claim Rejections - 35 USC § 102/103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-9 are rejected under 35 U.S.C. 102(b) as anticipated by, or alternatively under 35 U.S.C. 103(a) as being unpatentable over, USPN 6,089,802 to Bullock.

Regarding claims 1-9, Bullock teaches a composite material forming a strap for restraining freight, the material comprising a first layer comprising a plurality of strands comprising yarn and a second layer comprising nonwoven fabric, the second layer attached to the first layer (see entire document including column 3 lines 57-61, column 5 lines 41-57, column 6 lines 10-12).

Regarding claims 1-9, Bullock does not appear to specifically teach that the yarn has an elongation characteristic within the range of about 2.5 percent to about 4.7 percent before breaking and a creep of less than about 2 percent after elongation, wherein the elongation characteristic and creep are determined by a break load test on a tensile tester. Although the prior art does not appear to disclose the elongation characteristic, creep and the method by which the elongation characteristic and creep are determined, as can be best determined by Examiner, the claimed properties are deemed to be inherent to the structure in the prior art since the Bullock reference teaches an invention with a similar structural composition (plurality of polyester yarns attached to a second layer) as the claimed invention.

Regarding claim 2, the second layer is a spunbonded, polyester nonwoven fabric (column 5 lines 41-62).

Regarding claim 3, Bullock does not appear to specifically disclose that the composite material further includes a portion having a third layer comprising an adhesive substance positioned between the first layer and the second layer. However, the reference does disclose that the strands may be monolithic or inlaid (column 5 lines 51-53). "Inlaid" encompasses myriad bonding methods including adhesive or thermal bonding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a known bonding method such as an adhesive between the first and second layer to form a conventional cargo restraint system.

Regarding claim 4, each of the plurality of strands of yarn in the first layer is positioned generally parallel to a longitudinal axis of the second layer and side-by-side together (column 5 lines 41-61, column 6 lines 6-12).

Regarding claim 5, the composite material further comprises a releasable adhesive layer located on at least a portion of an outer surface of the composite material for attachment to a surface of a transportation vehicle (column 5 line 63 to column 6 line 4, column 7 lines 12-21).

Regarding claim 6, the composite material includes at least one finger edge positioned on at least a portion of a length of the composite material (column 5 lines 41-61, column 6 lines 6-12, Figure 4A, Figure 4B).

Regarding claim 7, the first layer has a width less than a width of the second layer and the at least one finger edge is formed by positioning the first layer equidistant between a bottom

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edge of the second layer and a top edge of the second layer (column 5 lines 41-61, column 6 lines 6-12, Figure 4A, Figure 4B).

Regarding claim 8, while the reference does not disclose a specific thickness of the materials, the reference does disclose an exemplary width of fifteen inches (column 5 lines 45-47). The reference teaches that various widths may be substituted depending on the necessity of additional strength. As the reference depicts cargo and cargo vessels of various size, it would have been obvious to one of ordinary skill in the art to adapt the size and thickness of the material to the dimensions of the cargo and the cargo vessel. For example, larger and heavier cargo would require greater strength as opposed to smaller and lighter cargo which would require lesser strength. Juxtaposed accordingly, since the reference teaches a correlation between width and strength, the disclosed dimensions in the reference appear to be no more than a preferred embodiment which is undistinguishable from the claimed dimensions, absent further evidence or unexpected results.

Regarding claim 9, the claim contains functional language without providing structure which can accomplish the claimed function. Thus, interpreted broadly since the claimed reinforcement strap does not identify a corresponding structure or a desired purpose, the additional reinforcing straps 43 or the release paper 34 may be considered analogous to the claimed reinforcement strap. The purpose of the straps is to provide added strength to the restraining strip and the release paper presumably further stabilizes the structure. Both are coupled to the composite material and both may run parallel to the longitudinal axis of the strap. Alternatively; an overlapping end of the restraining strap may be considered a "reinforcing strap" within the broad interpretation as it is coupled to the first piece of a restraining strap and is

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generally parallel to the longitudinal axis of the strap (column 6 lines 13-21, Figure 9, Figure 10).

In the event it is shown that Bullock does not disclose the claimed invention with sufficient specificity, the invention is obvious because Bullock discloses the claimed constituents and discloses that they may be used in combination.

Response to Arguments

13. Applicant's arguments filed February 16, 2007, regarding claims 1-9, have been fully considered but they are not persuasive. Applicant argues that the claimed properties of elongation characteristic and creep are not inherent in the invention of Bullock. Examiner respectfully disagrees. As set forth above, although Bullock does not appear to disclose the elongation characteristic, creep and the method by which the elongation characteristic and creep are determined, as can be best determined by Examiner, the claimed properties are deemed to be inherent to the structure in the prior art since the Bullock reference teaches an invention with a similar structural composition (plurality of polyester yarns attached to a second layer) as the claimed invention. As Applicant has not set forth any yarn capable of having the claimed elongation characteristic and creep, the polyester yarns appear to inherently have those claimed characteristics.

Applicant's arguments filed February 16, 2007, regarding claims 10 and 41-49 are moot in view of the new grounds of rejection set forth below.

Claim Rejections - 35 USC § 103

14. Claims 1-10 and 41-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bullock in view of USPN 4,929,503 to Shirasaki.

In the event it is shown that the elongation characteristic and creep do not appear to be inherent to the yarn, since Bullock is silent with regards to the specific denier and properties of the yarn, it would have been necessary and thus obvious to look to the prior art for conventional deniers and properties of yarns with high tenacity and creep resistance and with an elongation characteristic similar to the claimed invention. Shirasaki provides this conventional teaching showing that it is known in the art to use a composite fibrous material comprising polyethylene fiber and polyester fiber as a yarn with a denier about 1500, an elongation characteristic about 2.9-4.2% and a creep resistance of about 1.6% (Shirasaki, see entire document including column 1 lines 63-68, column 2 lines 51-65, column 3 lines 3-6, column 5 lines 1-18, Table 1).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the cargo restraint system of Bullock with the polyethylene and polyester yarns of Shirasaki motivated by the expectation of forming a composite material which is resistant to axial lengthening and which provides cargo with enhanced stability due to the high creep resistance.

Regarding claims 1-10, Bullock teaches a composite material forming a strap for restraining freight, the material comprising a first layer comprising a plurality of strands comprising yarn and a second layer comprising nonwoven fabric, the second layer attached to the first layer (see entire document including column 3 lines 57-61, column 5 lines 41-57, column 6 lines 10-12).

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Regarding claim 2, the second layer is a spunbonded, polyester nonwoven fabric (column 5 lines 41-62).

Regarding claim 3, Bullock does not appear to specifically disclose that the composite material further includes a portion having a third layer comprising an adhesive substance positioned between the first layer and the second layer. However, the reference does disclose that the strands may be monolithic or inlaid (column 5 lines 51-53). "Inlaid" encompasses myriad bonding methods including adhesive or thermal bonding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a known bonding method such as an adhesive between the first and second layer to form a conventional cargo restraint system.

Regarding claim 4, each of the plurality of strands of yarn in the first layer is positioned generally parallel to a longitudinal axis of the second layer and side-by-side together (column 5 lines 41-61, column 6 lines 6-12).

Regarding claim 5, the composite material further comprises a releasable adhesive layer located on at least a portion of an outer surface of the composite material for attachment to a surface of a transportation vehicle (column 5 line 63 to column 6 line 4, column 7 lines 12-21).

Regarding claim 6, Bullock appears to teach that the composite material includes at least one finger edge positioned on at least a portion of a length of the composite material (column 5 lines 41-61, column 6 lines 6-12, Figure 4A, Figure 4B).

Regarding claim 7, Bullock appears to teach that the first layer has a width less than a width of the second layer and the at least one finger edge is formed by positioning the first layer

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equidistant between a bottom edge of the second layer and a top edge of the second layer (column 5 lines 41-61, column 6 lines 6-12, Figure 4A, Figure 4B).

Regarding claims 8 and 48, while the reference does not disclose a specific thickness of the materials, the reference does disclose an exemplary width of fifteen inches (column 5 lines 45-47). The reference teaches that various widths may be substituted depending on the necessity of additional strength. As the reference depicts cargo and cargo vessels of various size, it would have been obvious to one of ordinary skill in the art to adapt the size and thickness of the material to the dimensions of the cargo and the cargo vessel. For example, larger and heavier cargo would require greater strength as opposed to smaller and lighter cargo which would require lesser strength. Juxtaposed accordingly, since the reference teaches a correlation between width and strength, the disclosed dimensions in the reference appear to be no more than a preferred embodiment which is undistinguishable from the claimed dimensions, absent further evidence or unexpected results.

Regarding claim 9, the claim contains functional language without providing structure which can accomplish the claimed function. Thus, interpreted broadly since the claimed reinforcement strap does not identify a corresponding structure or a desired purpose, the additional reinforcing straps 43 or the release paper 34 may be considered analogous to the claimed reinforcement strap. The purpose of the straps is to provide added strength to the restraining strip and the release paper presumably further stabilizes the structure. Both are coupled to the composite material and both may run parallel to the longitudinal axis of the strap. Alternatively, an overlapping end of the restraining strap may be considered a "reinforcing strap"

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within the broad interpretation as it is coupled to the first piece of a restraining strap and is generally parallel to the longitudinal axis of the strap (column 6 lines 13-21, Figure 9 and 10).

Regarding claim 10, the yarn has a denier of about 1500 (Shirasaki, Table 1).

Regarding claims 41-49, Bullock teaches a composite material forming a strap for restraining freight, the material comprising a first layer comprising a plurality of strands comprising yarn and a second layer comprising nonwoven fabric, the second layer attached to the first layer (see entire document including column 1, lines 27-34, column 3 lines 19-35, column 6 lines 9-44).

Regarding claim 41, Bullock does not appear to teach that the yarns have a denier within the range of about 1000 to 1500 and a creep of less than about 2 percent after elongation. Since Bullock is silent with regards to the specific denier and properties of the yarn, it would have been necessary and thus obvious to look to the prior art for conventional deniers and properties of yarns with high tenacity and creep resistance similar to the claimed invention. Shirasaki provides this conventional teaching showing that it is known in the art to use a composite fibrous material comprising polyethylene fiber and polyester fiber as a yarn with a denier about 1500 and a creep resistance of about 1.6% (Shirasaki, see entire document including column 1 lines 63-68, column 2 lines 51-65, column 3 lines 3-6, column 5 lines 1-18, Table 1). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the cargo restraint system of Bullock with the polyethylene and polyester yarns of Shirasaki motivated by the expectation of forming a composite material which is resistant to axial lengthening and which provides cargo with enhanced stability due to the high creep resistance.

Regarding claim 42, the second layer is a spunbonded, polyester nonwoven fabric (column 5 lines 41-62).

Regarding claim 43, Bullock does not appear to specifically disclose that the composite material further includes a portion having a third layer comprising an adhesive substance positioned between the first layer and the second layer. However, the reference does disclose that the strands may be monolithic or inlaid (column 5 lines 51-53). "Inlaid" encompasses myriad bonding methods including adhesive or thermal bonding. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a known bonding method such as an adhesive between the first and second layer to form a conventional cargo restraint system.

Regarding claim 44, each of the plurality of strands of yarn in the first layer is positioned generally parallel to a longitudinal axis of the second layer and side-by-side together (column 5 lines 41-61, column 6 lines 6-12).

Regarding claim 45, the composite material further comprises a releasable adhesive layer located on at least a portion of an outer surface of the composite material for attachment to a surface of a transportation vehicle (column 5 line 63 to column 6 line 4, column 7 lines 12-21).

Regarding claim 46, Bullock appears to teach that the composite material includes at least one finger edge positioned on at least a portion of a length of the composite material (column 5 lines 41-61, column 6 lines 6-12, Figure 4A, Figure 4B).

Regarding claim 47, Bullock appears to teach that the first layer has a width less than a width of the second layer and the at least one finger edge is formed by positioning the first layer

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equidistant between a bottom edge of the second layer and a top edge of the second layer (column 5 lines 41-61, column 6 lines 6-12, Figure 4A, Figure 4B).

Regarding claim 49, the claim contains functional language without providing structure which can accomplish the claimed function. Thus, interpreted broadly since the claimed reinforcement strap does not identify a corresponding structure or a desired purpose, the additional reinforcing straps 43 or the release paper 34 may be considered analogous to the claimed reinforcement strap. The purpose of the straps is to provide added strength to the restraining strip and the release paper presumably further stabilizes the structure. Both are coupled to the composite material and both may run parallel to the longitudinal axis of the strap. Alternatively, an overlapping end of the restraining strap may be considered a "reinforcing strap" within the broad interpretation as it is coupled to the first piece of a restraining strap and is generally parallel to the longitudinal axis of the strap (column 6 lines 13-21, Figure 9 and 10).

15. Claims 8 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bullock in view of Shirasaki, as applied to claims 1-10 and 41-49 above, and further in view of USPN 5,160,776 to Li.

In the event it is shown that the claimed thickness would not have been obvious to one of ordinary skill in the composite art at the time the invention was made, Li teaches a high tenacity composite comprising one or more layers of high strength polyester or polyethylene filaments which are woven or nonwoven, wherein each layer thickness is from about 0.0007 cm to about 0.02 cm (Li, Abstract, column 1 lines 15-25, column 4 line 4 to column 5 line 35, column 8 lines 30-55, column 10 line 67 to column 11 line 3). Therefore, it would have been obvious to one of

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ordinary skill in the art to form the composite of Bullock in view of Shirasaki with the thickness of Li, motivated by the desire to form a high strength composite with a tenacity of at least about 7 g/denier suitable for industrial application.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Y. Choi whose telephone number is (571) 272-6730. The examiner can normally be reached on Monday - Friday, 08:00 - 15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Peter Y. Choi
April 24, 2007



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PRIMARY EXAMINER